First Assistant Engineer, Towboat, **Bmk. No. C-23**
XH-4742-11

MAJOR DUTIES

Serves as First Assistant to the Chief Engineer on a large (over 100 feet in length) diesel-powered twin screw towboat with a total horsepower of 2, 000 hp or more operating in inland waters of the United States. Serves as the principal assistant to the Chief Engineer in the operation, maintenance, and repair of all engine room and associated machinery, refrigeration, plumbing, heating, and mechanical/hydraulic and electric/electronic systems. Is assigned as a shift engineer and stands a regular watch and is responsible for the engine room work activities during that shift. Notifies the Chief Engineer in case of major breakdown of equipment and may, in the absence of the Chief Engineer, serve in that capacity with responsibility for all watches.

1. As principal assistant to the Chief Engineer, participates with the Chief in his supervisory planning, work direction, and administration duties and responsibilities and ensures that his orders are carried out by various work crews. Discusses feasibility of repairs and methods and procedures to be followed by crews on watch. Regularly assists Chief Engineer in planning work schedules, outlining repairs, making cost estimates, and preparing performance appraisals on employees on all shifts. May act in the absence of the Chief Engineer with the responsibility for the effective and continuous operation of all mechanical, hydraulic, and electrical equipment and systems aboard the vessel and is on 24-hour call.

2. Incumbent is assigned to a shift and directs one or two engine room personnel employed in marine-oiler and/or striker occupations. Exercises shift watch responsibility for the operation, maintenance, and repair of all engine room machinery and equipment, including the main propelling engines, winches, rudder mechanisms, generators, relays, starters, air compressors, fuel pumps, water pumps, fire pumps, refrigeration plants, drinking water and coolant systems, heating and cooling systems, related electrical and/or electronic systems, and similar equipment.

a. Maintains continuous operating efficiency to prevent damage to machinery. Makes regular and periodic inspections by visual and auditory means of all machinery to determine the operating condition and the need for maintenance and repairs. Makes minor adjustments and emergency repairs on own initiative and reports major defects to the Chief Engineer. Accomplishes repairs such as replacing bearings, castings, etc.; repairing fuel lines; grinding valves; replacing cylinders and pistons; and removing and replacing complete assemblies. Ensures that all moving parts are properly lubricated. Assists in painting equipment and keeping the engine room clean.

b. Controls the operation of heating, refrigeration, and plumbing systems by manipulating necessary winches, throttles, and switches. Checks and controls the quantity of fuel, oil, water, etc., furnished for proper operation of the vessel machinery. Observes gages such as pressure gages, vacuum gages, fuel oil gages, tachometers, pyrometers, etc., to determine the proper functioning of machinery. Makes inspections to check oil levels, motor generators, gearboxes, generator temperatures, fuel levels, etc. Checks and controls the operation of heating, refrigeration, plumbing, waste disposal/treatment, and water supply systems noting any unusual or abnormal conditions and determines the causes and remedial action necessary. Checks all water

systems to ensure proper chlorination in drinking water and proper chemicals for sedimentation and other purposes. Prepares reports of fuel oil and lubrication consumption and records readings of the gages during the watch.

c. Instructs and trains subordinates in procedures and methods and observes their work for accuracy and compliance with instructions. Lays out their work and instructs them on unusual or difficult work and inspects operations and completed work. Orients new employees and conducts exit interviews with employees who leave the service. Provides input to the Chief Engineer concerning subordinates performance appraisals. Reports disciplinary problems to the Chief Engineer for resolution. Prepares shift reports reflecting the work activities during the shift and maintains an engine room log of activities. Instructs and trains subordinates in the safe and efficient performance of their duties and studies the operations directed with a view to correcting or reporting for correction any unsafe condition or practice that might cause injury to employees or persons or property damage.

3. Participates in major repairs and maintenance during lay-up periods.

Performs other duties as assigned.

SKILLS AND KNOWLEDGES

--Must possess a U.S. Coast Guard Assistant Engineer's license commensurate with the type engine room machinery and equipment, horsepower, and characteristics of the vessel to which assigned. If required to serve as Chief Engineer, must possess a Chief Engineer's license. Applies a knowledge of the vessel: mechanical, hydraulic, electrical, and/or electronic equipment systems, and auxiliary equipment and machinery, and the related skill requirements to diagnose problems and malfunctions and supervise and participate in the repair, replacement, and modification of such machinery, engines, and systems. Applies the knowledge of understand how such equipment and systems operate individually or in combination and the ability to plan and lay out repair, replacement, maintenance, and modification plans and requirements ranging from those of a minor nature to those of extreme complexity. Applies a knowledge of the fuel and water treatments associated with the various equipment and systems.

--Knowledge and ability to interpret and apply working drawings, sketches, diagrams, blueprints, and various information reflected in technical manuals. Applies a knowledge of advanced shop math to accomplish computations pertinent to electricity and electronics, electrical equipment, air conditioning and heating, refrigeration and mechanical dimensions, tolerances, and voltages. Applies skill and knowledge in the use of a variety of testing instruments including ammeters, ohmmeters, refrigeration gages, and temperature testers in diagnosing problems and malfunctions, and a variety of measuring devices including feeler gages, vernier calipers, inside and outside calipers and micrometers, thread gages, dial indicators, screw pitch gages, protractors, dividers, composers, steel squares, clinometers, etc. Applies skill to accomplish work to tolerances of .001 inch.

--Knowledge of the use of lathes, shapers, and milling machines to understand the processes necessary for certain repairs. Applies skill and knowledge in the use of honing equipment,

grinders, jig borers, flame-cutting processes, and a variety of electric and hand tools common to the trades involved. Applies a knowledge of the characteristics of a variety of metals and alloys such as stainless steel, monel, brass, bronze, babbit, silver, aluminum, mild and hardened steels, etc.

RESPONSIBILITY

Works under the general supervision of the Chief Engineer who outlines work schedules and plans for repair work to the accomplished. Recommends and participates in changing work plans to prevent delays, shutdowns, or damage, or to increase efficiency. Accomplishes and directs minor adjustments and repair on own initiative and reports major problems and malfunctions to the Chief Engineer and participates with him in determining the action to be taken. Supervises the crew and personally makes major repairs as specified by the Chief Engineer and accomplishes such work under his general supervision. Supervisor is on call at all times to provide guidance and assistance. Work is spot checked during operation and periodically given a more detailed inspection for operational efficiency. Is in technical charge of the engine room during his shift and when serving as Chief Engineer. Work is guided by written and oral instructions; operational and repair manuals; drawings, wiring diagrams, and sketches; and standard marine engine room practices. Ensures that job requirements and engine room work activities comply with established safety procedures and regulations.

WORKING CONDITIONS

Work is performed inside and outside, subjecting employee to varying climatic conditions, abnormal noises, temperature, danger of burns, irritation from grease and oils, bruises, strains, danger from attending moving machinery, falling overboard, electrical shock, falls on slippery decks or steep stairways, possible drowning, and crankcase explosion. A life jacket is worn at all times while on deck.

PHYSICAL EFFORT

Incumbent performs work from ladders, scaffolding, and platforms and where the parts, equipment, or systems are in hard-to-reach places. Work requires the incumbent to stand, stoop, bend, kneel, climb, and work in a tiring and uncomfortable position. Frequently lifts, carries, and sets up parts and equipment that weigh up to 40 pounds.

FIRST ASSISTANT ENGINEER, TOWBOAT
XH-4742-11
EVALUATION STATEMENT

1. REFERENCES:

a. OPM, JGS, Utility Systems Repairer-Operator Series, WG-4742, July 1993

b. U.S. Army Corps of Engineers Ladder Diagram, 1953

2. SERIES AND TITLE DETERMINATION:

Position serves as the First Assistant to the Chief Engineer on a large (over 100 feet in length) diesel-powered twin screw towboat with a total horsepower of 2,000 hp or more operating in inland waters of the United States. Incumbent is assigned as a shift engineer and stands a regular watch, and is responsible for the engine room work activities during that shift. Directs one or two engine room personnel employed in marine-oiler and/or striker occupations. May act in the absence of Chief Engineer. Duties require a knowledge of the vessel diesel, electric, mechanical, hydraulic and/or electronic equipment, systems, and auxiliary plant and machinery, and the related knowledge and skill requirements to diagnose problems and malfunctions, and supervise and participate in the repair, replacement, and modification of such machinery, engines, and systems. Employee must hold a U.S. Coast Guard Assistant Engineer's license commensurate with the type engine room machinery and equipment, horsepower, and characteristics of the vessel to which assigned. If required to serve as Chief Engineer, must possess a Chief Engineer's license. Position is allocated to the WG-4742 series. Position is titled First Assistant Engineer, Towboat, in keeping with prevailing maritime titling practices. The absence of the requirement for serving as Assistant to the Chief Engineer precludes classification as a First Assistant Engineer.

3. GRADE DETERMINATION:

This position exercises the highest level of technical engine room supervision over diesel, mechanical, hydraulic, electronic/electric, diagnostic and repair work subordinate to the Chief Engineer. In addition to serving as an Engine Room Crew Chief on one of the shifts, employees in this job serve as assistant to the Chief Engineer, and participate in supervisory planning, work direction and administrative duties and responsibilities. Employees in this job may serve as Chief Engineer in his/her absence.

a. The volume, scope and variety of the machinery, equipment and systems which must be maintained, repaired or modified involves substantial operation and repair complexities and requirements necessitating that the incumbent possess journeyman mechanical, hydraulic, electronic/electric diagnostic and repair knowledges and skills.

b. Serving in charge of a shift requires the First Assistant to lead and direct one or more engine room personnel employed as Marine Oilers and Strikers or in comparable occupations.

The job requires serving as assistant to the Chief Engineer and assisting him in the accomplishment of his full foreman type responsibilities. The First Assistant Engineer is ranked one grade level below that of the Chief Engineer and five grades below that of the Master.

4. FINAL DETERMINATION: First Assistant Engineer, Towboat, XH-4742-11

NOTES ON USING THIS BENCHMARK

The grade of the First Assistant Engineer is ranked one grade level below that of the Chief Engineer and five grades below the Master. If the Master is graded lower because of the significantly lesser vessel characteristics, the First Assistant Engineer is graded lower accordingly.

The key difference between the First Assistant and the Second Assistant is that the First Assistant participates with the Chief in accomplishing his overall engine room supervisory responsibilities. Instances where this requirement is absent mandates classification as a Second Assistant Engineer.

No criteria is provided since the XH-11 level represents the maximum level to which a First Assistant Engineer on a towboat may be assigned.